

Unit in mm

Telecommunication

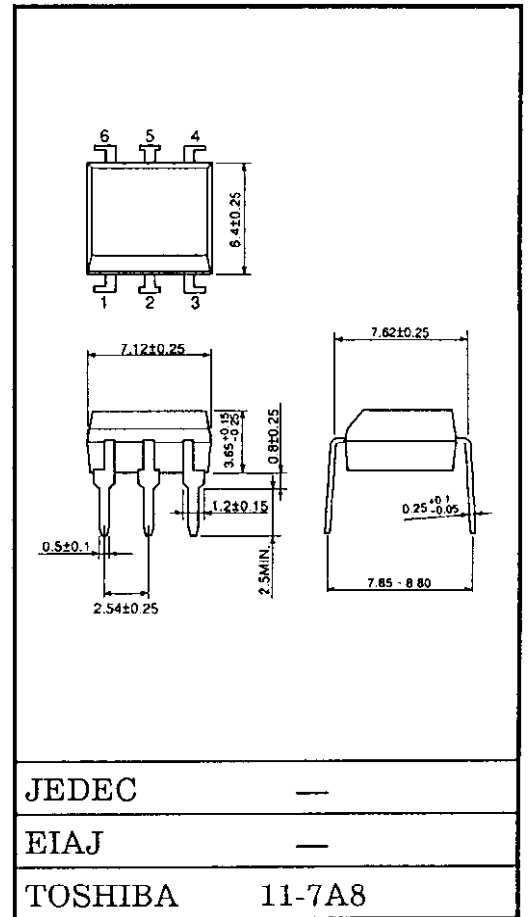
Data Acquisition

Measurement Instrumentation

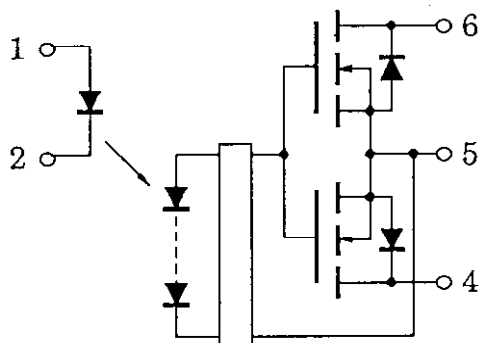
The Toshiba TLP596G consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOSFET in a six lead plastic DIP package. The TLP596G is a bi-directional switch which can replace mechanical relays in many applications.

- Peak Off-State Voltage : 400V (Min.)
- On-State Current : 120mA (Max.) (A Connection)
- On-State Resistance : 30Ω (Max.) (A Connection)
- Insulation Thickness : 0.4mm (Max.)
- Isolation Voltage : 2500Vrms (Min.)
- UL Recognized : UL1577, File No. E67349
- Trigger LED Current (Ta = 25°C)

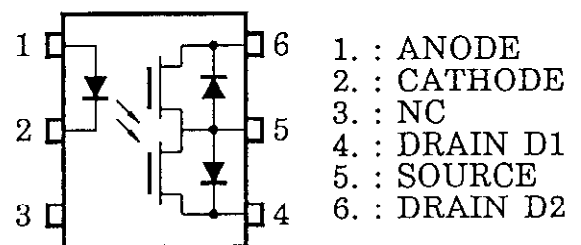
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Tape and Reel	39-40



Pin Configuration (Top View)



Schematic



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CLASSIFICATION (Note 1)	TRIGGER LED CURRENT (mA)		MARKING OF CLASSIFICATION
	@ $I_{ON} = 120\text{mA}$		
	MIN.	MAX.	
(IFT2)	–	2	T2
Standard	–	5	T2, Blank

Note 1: Application type name for certification test, please use standard product type name, i.e., TLP596G (IFT2): TLP596G

Maximum Ratings (Ta = 25°C)

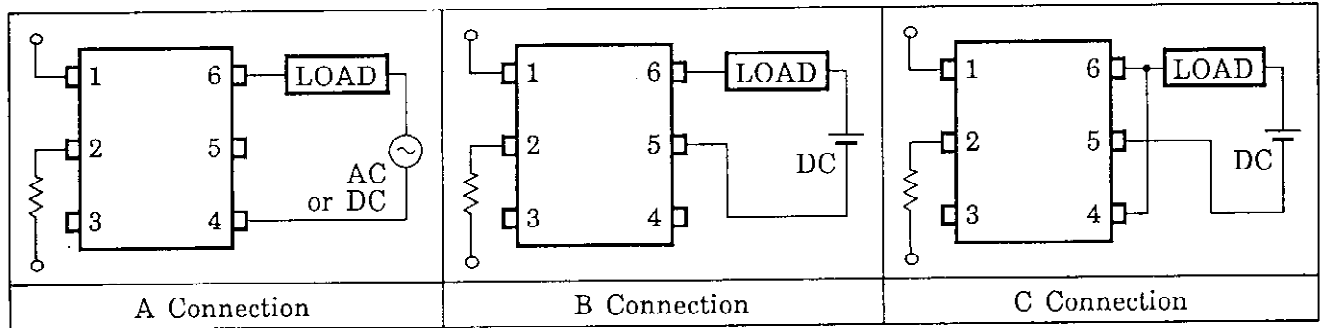
CHARACTERISTIC		SYMBOL	RATING	UNIT	
LED	Forward Current	I_F	50	mA	
	Forward Current Derating (Ta ≥ 25°C)	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	
	Peak Forward Current (100µs pulse, 100pps)	I_{FP}	1	A	
	Reverse Voltage	V_R	5	V	
	Junction Temperature	T_j	125	°C	
DETECTOR	Off-State Output Terminal Voltage	V_{OFF}	400	V	
	On-State RMS Current	A Connection	120	mA	
		B Connection	150		
		C Connection	200		
	On-State Current Derating (Ta ≥ 25°C)	A Connection	$\Delta I_{ON}/^\circ\text{C}$	-1.2	mA/°C
		B Connection	-1.5		
		C Connection	-2.0		
Junction Temperature	t_j	125	°C		
Storage Temperature Range		T_{stg}	-55~100	°C	
Operating Temperature Range		T_{opr}	-20~85	°C	
Lead Soldering Temperature (10s)		T_{sol}	260	°C	
Isolation Voltage (AC, 1 min., R.H. ≤ 60%) (Note 1)		BV_S	2500	V_{rms}	

Note 1: Device considered a two terminal device: pins 1, 2 and 3 shorted together, and pins 4, 5 and 8 shorted together.

Recommended Operating Conditions

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MX.	UNIT
Supply Voltage	V_D	–	–	320	V
Forward Current	I_F	7.5	15	25	mA
On-State Current	I_{ON}	–	–	120	mA
Operating Temperature	T_{opr}	-20	–	80	°C

Circuit Connections



Individual Electrical Characteristics (Ta = -25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.*	MX.	UNIT
LED	Forward Voltage	V_F	$I_F = 10\text{mA}$	1.0	1.15	1.3	V
	Reverse Current	I_R	$V_R = 5\text{V}$	–	–	10	μA
	Capacitance	C_T	$V = 0, f = 1\text{MHz}$	–	30	–	pF
DETECTOR	Off-State Current	I_{OFF}	$V_{OFF} = 400\text{V}$	–	–	1	μA
	Capacitance	C_{OFF}	$V = 0, f = 1\text{MHz}$	–	–	–	pF

Coupled Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MX.	UNIT
Trigger LED Current		I_{FT}	$I_{ON} = 120\text{mA}$	–	1	5	mA
On-State Resistance	A Connection	R_{ON}	$I_{ON} = 120\text{mA}, I_F = 10\text{mA}$	–	20	30	Ω
	B Connection		$I_{ON} = 150\text{mA}, I_F = 10\text{mA}$	–	12	20	
	C Connection		$I_{ON} = 200\text{mA}, I_F = 10\text{mA}$	–	6	10	

Isolation Characteristics (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MX.	UNIT
Capacitance Input to Output	C_S	$V_S = 0, f = 1\text{MHz}$	–	0.8	–	pF
Isolation Resistance	R_S	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	–	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	–	–	V_{rms}
		AC, 1 second in oil	–	5000	–	
		DC, 1 minute in oil	–	5000	–	V_{dc}

Switching Characteristics (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MX.	UNIT
Turn-on Time	t_{on}	$R_L = 200\Omega$ $V_{\text{DD}} = 20\text{mA}, I_F = 10\text{mA}$	–	–	2	ms
Turn-off Time	t_{off}		–	–	2	

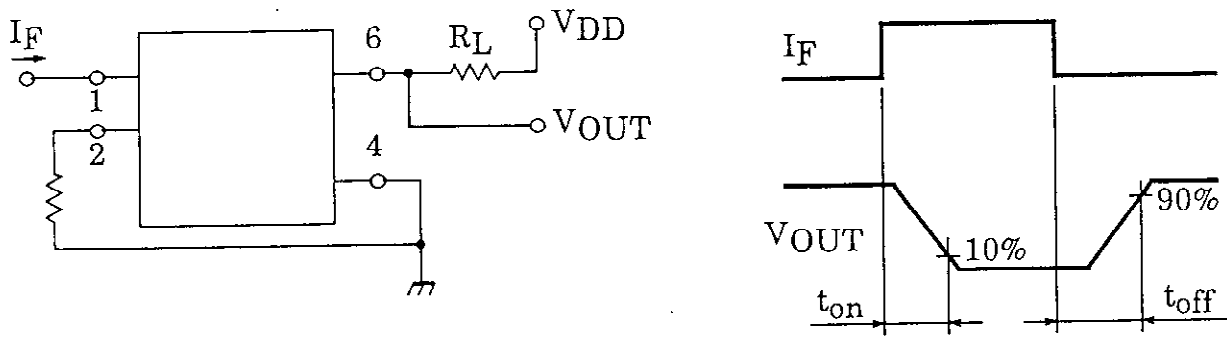


Figure 1. Switching Time Test Circuit

